UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,082	06/25/2003	Jeremy R. Myles	5513P012	6537

8791 7590 04/19/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
KAO, CHIH CHENG G	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,082	MYLES, JEREMY R.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,19-29 and 32-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,19-29 and 32-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/25/03, 8/18/03.* 34904 072604/100704
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: IDS: 1/23/04, 4/19/04, 7/26/04, and 10/7/04.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-9, 19-29, and 32-59) in the reply filed on 2/3/05 is acknowledged.

Information Disclosure Statement

2. The information disclosure statement filed 4/19/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The missing copy is Jaffray ("Cone-Beam CT: Application in Image Guided External Beam Radiotherapy and Brachytherapy") as cited on Sheet 6 of 9 in the IDS filed 4/19/04.

Also note that "Advanced Workstation for Irregular Field Simulation and Image Matching" in the IDS filed on 4/19/04 has already been cited in the IDS filed 6/25/03 and considered by the Examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: (fig. 3, #400), (fig. 4, #500), and (fig. 5, #600).

The drawings (figs. 1a and 1b) are objected to as failing to comply with 37 CFR 1.84 (p)(3) because numbers, letters, and reference characters must measure at least 0.32 cm (1/8 inch) in height.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The abstract of the disclosure is objected to because of the following informality. In line 4, in the phrase "According another embodiment", the word - -to- - should be inserted. Appropriate correction is required.

5. The specification is objected to because of the following informality, which appears to be a minor draft error creating grammatical problems.

In the following format (location of objection; suggestion for correction), the following correction may obviate the objection: (paragraph 38, line 6, "accomplished is necessary"; replacing "is" with - -if- -).

Appropriate correction is required.

Claim Objections

6. Claims 4, 7, 23, 24, 28, 29, 32, 36, 37, 41, 42, 44, 47, 49, 53, and 58 are objected to because of the following informalities, which appear to be minor draft errors creating grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 4, line 3, "simulate the execution"; deleting "the"), (claim 7, line 2, "images of the target volume"; replacing "the" with - -a- -), (claim 23, line 2, "the corrected digital image"; replacing "the" with - -a- -), (claim 24, line 1, "the providing input"; deleting "input"), (claim 28, line 2, "the corrected digital image"; replacing "the" with - -a- -), (claim 29, line 1, "the providing input"; deleting "input"), (claim 32, line 2, "of adjusting a method of adjusting"; deleting "a method of adjusting"), (claim 36, line 2, "the corrected digital image"; replacing "the" with - -a- -), (claim 37, line 1, "the providing input"; deleting "input"), (claim 41, line 2, "the corrected digital image"; replacing "the" with - -a- -), (claim 42, line 1, "the providing input"; deleting "input"), (claim 44, line 2, "the field"; replacing "the" with - -a- -), (claim 47, line 2, "a means for verifying the treatment plan, the means for verifying the treatment plan to"; deleting ", the means for verifying the treatment plan"), (claim 47, line 3, "the simulated execution"; deleting "the"), (claim 49, line 2, "the target

volume"; replacing "the" with - -a- -), (claim 53, line 4, "the patient electronically coupled to"; inserting - -being- - before "electronically"), (claim 53, line 5, "means for computing producing"; replacing "producing" with - -to produce- -), (claim 53, line 6, "facilitates the treatment"; deleting "the"), (claim 53, line 7, "means for computing electronically coupled"; inserting - -being- - before "electronically"), and (claim 58, lines 5-6, "the gantry is a cast gantry, the gantry, the patient support, and the radiation detector being electronically coupled"; inserting - -and wherein- - after "cast gantry," and replacing "being" with - -are- -).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 4, 5, 43, 44, 46, 47, and 55-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Bailey et al. (US Patent Application Publication 2003/0048868).

8. Regarding claims 1, 2, 43, and 44, Bailey et al. discloses a machine readable medium having instructions (fig. 1, #80) to cause a machine (fig. 1) to perform a method comprising

receiving a treatment plan of a target volume (paragraph 49, lines 1-5), receiving a fluoroscopy data image of the target volume (paragraph 48), and adjusting automatically the treatment plan (paragraph 53, lines 7-9) based on movement in the fluoroscopy data image (paragraph 48), wherein the adjusting includes adjusting treatment field information to allow for movement in a field (paragraph 41, lines 12-17, and paragraph 51).

9. Regarding claims 4, 5, 46, and 47, Bailey et al. discloses a system comprising a means for generating a treatment plan (paragraph 37, line 4, and fig. 1, #80), a means for simulating the treatment plan on a patient (paragraph 37, lines 1-3), and a means for verifying the treatment plan to adjust the treatment plan based on simulated execution of the treatment plan (paragraph 48).

10. Regarding claim 55, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), a patient support (fig. 1, #60), a radiation detector (fig. 1, #24), a computer workstation (fig. 1, #80) for controlling simulation of a radiation treatment plan (paragraph 37), and a generator for providing power (fig. 1, #84 and 82) to the radiation source (fig. 1, #22a), wherein the workstation (fig. 1, #80) controls the generator (fig. 1, #84 and 82).

11. Regarding claims 56 and 57, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), a patient support (fig. 1, #60), a radiation detector (fig. 1, #24), wherein said radiation source (fig. 1, #22a) is at a fixed position relative to the gantry (fig. 1, #18), and further comprising means to move (paragraph 42, lines 2-5) the patient

support (fig. 1, #60) as the gantry rotates (paragraph 39, lines 1-2) to maintain a constant distance between the radiation source (fig. 1, #22a) and a defined point in space (fig. 1, "center of rotation").

12. Claims 4, 6, 8, 46, 48, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy et al. (US Patent 5901199).

Murphy et al. discloses a system comprising a means for generating a treatment plan (abstract, lines 10-18), and a means for simulating the treatment plan on a patient, wherein the treatment plan includes a digitally reconstructive radiograph image (abstract, lines 8-9), and wherein the digitally reconstructive radiograph image (fig. 4 and col. 3, lines 24-26) is imported into the system (fig. 3).

13. Claims 19-29 and 32-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Frohlich et al. (US Patent 6516046).

14. Regarding claims 19, 20, 25, 32, 33, and 38, Frohlich et al. discloses a machine readable medium having instructions to cause a machine to perform a method (col. 3, lines 19-23) comprising displaying a digital image of a patient based on a treatment plan (col. 3, lines 20-22), providing input associated with the digital image, and automatically adjusting one or more components of a radiotherapy simulator system or a treatment plan based on the input associated with the digital image (col. 6, lines 59-65), wherein the components include at least one of a treatment bench, radiation source, or an imager (col. 6, lines 61-62).

15. Regarding claims 21, 22, 26, 27, 34, 35, 39, and 40, Frohlich et al. further discloses wherein displaying the digital image includes overlaying a simulator digital image and a digitally reconstructed radiograph image (col. 3, lines 19-23) and automatically displaying fields of data based on the digital image (fig. 5).

16. Regarding claims 23, 28, 36, and 41, Frohlich et al. further discloses recalculating the treatment plan based on a corrected digital image (col. 6, line 59-60), and would necessarily save the recalculated treatment plan in order to further send information from a computer to controllers (col. 6, lines 57-65).

17. Regarding claims 24, 29, 37, and 42, Frohlich et al. further discloses providing a radiation field input (col. 3, line 23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 3 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. as applied to claims 1 and 43 above, and further in view of Weinberger et al. (US Patent 5764723).

Bailey et al. discloses a method and medium as recited above.

However, Bailey et al. does not disclose adjusting gating information in a treatment plan.

Weinberger et al. teaches adjusting gating information (fig. 1, #7) in a treatment plan (title).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method and medium of Bailey et al. with the adjusting of Weinberger et al., since one would be motivated to make such a modification to reduce normal tissue complications (col. 1, lines 63-65) as shown by Weinberger et al.

19. Claims 7 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. as applied to claims 6 and 48 above, and further in view of Jaffray et al. (US Patent Application Publication 2003/0007601).

Murphy et al. discloses a system as recited above. Murphy et al. further discloses wherein means for simulating generates fluoroscopy images of a target volume to confirm the digitally reconstructive radiography image (abstract, lines 8-18).

However, Murphy et al. does not disclose digital images.

Jaffray et al. teaches digital images (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Murphy et al. with the digital images of Jaffray et al., since one would be motivated to make such a modification to enhance spatial resolution (paragraph 91) as shown by Jaffray et al. for better images.

20. Claims 9 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. as applied to claims 6 and 48 above, and further in view of Frohlich et al.

Murphy et al. discloses a system as recited above. Murphy et al. further discloses a computed tomography scanner to generate a digitally reconstructive radiograph image (fig. 2, #1).

However, Murphy et al. does not disclose a cone-beam scanner.

Frohlich et al. teaches a cone-beam scanner (fig. 2, and col. 5, lines 25-27 and 34-36).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Murphy et al. with the cone-beam scanner of Frohlich et al., since one would be motivated to make such a modification for more precise positioning (col. 2, lines 11-14) as implied from Frohlich et al.

21. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. in view of Jaffray et al.

Bailey et al. discloses a method comprising the steps of placing a patient (fig. 1, #62) on a patient support (fig. 1, #60), producing an image (fig. 1, #36) of the patient using an imager (fig. 1, #24) while on the patient support (fig. 1, #60), producing a treatment plan (paragraph 43) for placement of a radiation source (paragraph 49, lines 5-8) while the patient (fig. 1, #62) is on the patient support (fig. 1, #60), and treating the patient (fig. 1, #62) according to the treatment plan on the patient support (fig. 1, #60).

However, Bailey et al. does not disclose a flat panel imager.

Jaffray et al. teaches a flat panel imager (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Bailey et al. with the imager of Jaffray et al., since one would be motivated to make such a modification to enhance spatial resolution (paragraph 91) as shown by Jaffray et al. for better images.

22. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. in view of Jaffray et al. and Crawford (US Patent 5046003).

Bailey et al. discloses an apparatus comprising a means for supporting (fig. 1, #60) a patient (fig. 1, #62), a means for producing an image (fig. 1, #36) of the patient (fig. 1, #60) using an imager (fig. 1, #24), and a means for computing (fig. 1, #80) to produce a treatment plan (paragraph 43) for placement of a radiation source (paragraph 49, lines 5-8) to the patient (fig. 1, #62), wherein the means for computing further facilitates treatment of the patient based on the produced treatment plan (paragraphs 47-49), the means for computing being electronically coupled (fig. 1, #80) to the means for producing the image (fig. 1, #24).

However, Bailey et al. does not disclose a flat panel imager and means for supporting the patient being electronically coupled to means for producing an image.

Jaffray et al. teaches a flat panel imager (abstract). Crawford teaches means for supporting the patient (fig. 5, #14) being electronically coupled (fig. 5, #60) to means for producing an image (fig. 5, #18).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Bailey et al. with the imager of Jaffray et al.,

since one would be motivated to make such a modification to enhance spatial resolution (paragraph 91) as shown by Jaffray et al. for better images.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Bailey et al. with the electronically coupled means of Crawford, since one would be motivated to make such a modification to reduce costs by using just one computer (fig. 5, #60) as implied from Crawford.

23. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghelmansarai (US Patent 6783275) in view of Jaffray et al.

Ghelmansarai discloses a system comprising means for simulating a radiation treatment plan (fig. 2, #29, and col. 1, lines 39-47), a source of radiation (fig. 2, #28), and a detector for detecting the radiation (fig. 2, #25).

However, Ghelmansarai does not disclose a flat panel detector for detecting x-ray radiation.

Jaffray et al. teaches a flat panel detector for detecting x-ray radiation (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Ghelmansarai with the x-ray, flat panel detector of Jaffray et al., since one would be motivated to make such a modification to enhance spatial resolution (paragraph 91) as shown by Jaffray et al. for better images.

24. Claims 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. ("Development of Advanced Multislice CT Scanner Aquilion") in view of Toshiba ("Clinical

Performance: Delivering upon the Promise of Multi-slice CT through Proven Performance") and Crawford.

Mori et al. discloses a system comprising a gantry (fig. 3, gantry on the right) having a radiation source (fig. 11b, "x-ray source"), a patient support (fig. 3, table on left), and a radiation detector (fig. 11b, "detector").

However, Mori et al. does not disclose an aluminum cast gantry, and the gantry, patient support, and detector being electronically coupled.

Toshiba teaches an aluminum cast gantry (page 3, col. 1, lines 28-31). Crawford teaches a gantry (fig. 5, #16), patient support (fig. 5, #14), and detector (fig. 5, #18) being electronically coupled (fig. 5, #60).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Mori et al. with the aluminum cast gantry of Toshiba, since one would be motivated to make such a modification to lengthen the lifetime of components (page 3, col. 1, lines 21-31) as implied from Toshiba.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Mori et al. with electronically coupled components of Crawford, since one would be motivated to make such a modification to reduce costs by using just one computer (fig. 5, #60) as implied from Crawford.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gk

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER